

CLAIMS

What is claimed is:

Claim 1. A linear engaging headless fastener system comprising:

a body member having an outer surface positioned about a central axis, said body member having a first end including a cavity, said cavity having an engaging surface, said engaging surface tapering inwardly from about said first end and extending toward a second end, said second end defining a clamping surface adapted to provide a clamping force to an assembly;

an expander member having a first end, a second end, and an outer surface positioned about a central axis, said outer surface tapering outwardly from said first end and extending toward said second end, said first end being insertable into said body member cavity;

whereby said outer surface of said expander member is constructed and arranged for coaxial alignment and engagement with respect to said engaging surface of said body member, said expander member being linearly traversable with respect to said engaging surface of said body member between a first release position and a second engaged position, wherein said engaged position results in said tapered surfaces circumferentially expanding said body member to provide compression loading of said expander member, wherein said body member outer surface engages an aperture having an inner

1 gripping surface, and wherein said release position results in  
2 circumferential contraction of said body member outer surface  
3 thereby releasing said inner gripping surface of said aperture.  
4

5 Claim 2. The linear engaging fastener system of claim 1  
6 including means projecting radially from said outer surface of  
7 said body member outer surface for engagement with said inner  
8 surface of said aperture for locking said body member in a  
9 predetermined position.  
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11 Claim 3. The linear engaging fastener system of claim 2  
12 wherein said radially projecting means includes at least one  
13 outwardly and circumferentially extending rib, each said rib  
14 including a first ramp surface to facilitate coaxially aligned  
15 linear movement of said fastener body in relation to said inner  
16 gripping surface of said aperture to provide a secondary  
17 clamping force upon engagement of said expander member.  
18

19 Claim 4. The linear engaging fastener system of claim 3  
20 wherein said at least one circumferentially extending rib  
21 includes a second ramp surface to facilitate coaxially aligned  
22 linear insertion of said fastener into said inner gripping  
23 surface of said aperture.  
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25 Claim 5. The linear engaging fastener system of claim 4  
26 wherein said radially projecting means are helical threads.

1           Claim 6. The linear engaging fastener system of claim 2  
2 wherein said radially projecting means define a knurled  
3 surface.

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5           Claim 7. The linear engaging fastener system of claim 1  
6 wherein said first end of said body member includes at least  
7 one driving surface, said at least one driving surface  
8 constructed and arranged to cooperate with a driving tool for  
9 providing rotational force to said body member.

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11          Claim 8. The linear engaging fastener system of claim 7  
12 wherein said at least one driving surface is adapted to  
13 cooperate with a screwdriver.

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15          Claim 9. The linear engaging fastener system of claim 1  
16 wherein said first end of said body member includes a plurality  
17 of driving surfaces, said plurality of driving surfaces  
18 constructed and arranged to cooperate with a driving tool for  
19 providing rotational force to said body member.

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21          Claim 10. The linear engaging fastener system of claim 9  
22 wherein said plurality of driving surfaces are adapted to  
23 cooperate with a hex shaped tool.

1           Claim 11. The linear engaging fastener system of claim 1  
2 wherein said clamping surface is selected from the group  
3 consisting of flat point, dog point, half dog point, cup point,  
4 oval point, cone point or knurled point.

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6           Claim 12. The linear engaging fastener system of claim 1  
7 wherein said body member is constructed of metal.

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9           Claim 13. The linear engaging fastener system of claim 1  
10 wherein said body member is constructed of polymeric material.

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12           Claim 14. The linear engaging fastener system of claim 1  
13 wherein said body member is constructed of rubber.

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15           Claim 15. The linear engaging fastener system of claim 1  
16 wherein said engaging surface within said cavity is a self-  
17 locking taper.

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19           Claim 16. The linear engaging fastener system of claim 16  
20 wherein said self-locking taper is selected from the group  
21 consisting of MORSE, BROWN & SHARPE, JARNO, AMERICAN NATIONAL  
22 STANDARD MACHINE, JACOBS and BRITISH STANDARD.

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24           Claim 17. The linear engaging fastener system of claim 1  
25 wherein said expander member includes at least one internal  
26 bore extending inwardly from said first end of said expander

1 member along a longitudinal centerline, wherein said at least  
2 one internal bore is constructed and arranged for gripping and  
3 placing a tensile load on said expander member prior to linear  
4 traversal of said expansion member into said disengaged  
5 position with respect to said body member.

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7 Claim 18. The linear engaging fastener system of claim 17  
8 wherein said internal bore includes internal threads.

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10 Claim 19. The linear engaging fastener system of claim 1  
11 wherein said outer surface of said expander member includes a  
12 self-locking taper.

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14 Claim 20. The linear engaging fastener system of claim 19  
15 wherein said self-locking taper is selected from the group  
16 consisting of Morse, Brown & Sharpe, Jarno, American National  
17 Standard Machine, Jacobs and British Standard.

18  
19 Claim 21. The linear engaging fastener system of claim 19  
20 wherein said outer surface of said expander member and said  
21 inner engaging surface of said body member are constructed and  
22 arranged to maintain an axially aligned interfitting  
23 relationship in said release position.